

Patent Application Number: 10/619,246

In the Claims

1. (Currently Amended) A vehicle mounted oil recovery system, comprising:  
a conduit to transport extracted oil from an engine lubricating system of the vehicle;  
a retort system, mounted upon the vehicle and operatively connected to said conduit to receive the transported extracted oil, to pyrolyze and distill, through vaporization, the transported extracted oil into vaporized individual components;  
said retort system including a sloping tube;  
said sloping tube having a first end and a second end such that the extracted oil drains progressively down from said first end to said second end;  
said sloping tube having a surface temperature gradient, a surface temperature associated with said first end being less than a surface temperature associated with said second end.
2. (Currently Amended) The vehicle mounted oil recovery system as claimed in claim 1, further comprising:  
a second conduit to convey transport the vaporized components to a fuel-air system of the vehicle for combustion thereof.
3. (Currently Amended) The vehicle mounted oil recovery system as claimed in claim 1, further comprising:  
a second conduit to convey the vaporized components to a fuel-air system of the vehicle for combustion thereof ~~a second conduit to transport the vaporized components, a temperature controlled separation chamber operatively connected to said second conduit to receive the transported vaporized components; said temperature controlled separation chamber cooling oil vapor components so as to condense the oil vapor components into usable lubricating oil; a third conduit, operatively connected to said temperature controlled separation chamber, to transport post condensing vaporized components remaining within said temperature controlled separation chamber to a fuel system of the vehicle for combustion thereof; and a fourth conduit, operatively connected to said temperature controlled separation chamber, to transport the condensed oil vapor components to the engine lubricating system of the vehicle;~~

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said retort system including a temperature controlled chamber, operatively connected to said second conduit, to provide supplemental heat so as to maintain a portion of the vaporized components vaporized, said portion of the vaporized components being conveyed by said second conduit.

4. (Currently Amended) The vehicle mounted oil recovery system as claimed in claim 1, wherein said retort system is mounted directly upon an exhaust system of the vehicle, said retort system capturing heat from the exhaust system of the vehicle to provide energy to pyrolyze and distill for the vaporization of the transported extracted oil into vaporized individual components.

5. (Currently Amended) The vehicle mounted oil recovery system as claimed in claim 1, further comprising an active heating device operatively connected to said retort system so as to provide energy to said retort system to pyrolyze and distill for the vaporization of the transported extracted oil into vaporized individual components.

6. (Currently Amended) The vehicle mounted oil recovery system as claimed in claim 1, further comprising:

a cyclonic/centrifugal sludge remover to remove sludge and water from the oil of engine lubricating system of the vehicle; and

a second conduit to convey transport the removed sludge and water to said retort system.

7. (Currently Amended) The vehicle mounted oil recovery system as claimed in claim 3, further comprising:

a cyclonic/centrifugal sludge remover to remove sludge and water from the oil of engine lubricating system of the vehicle; and

a fifth third conduit to convey transport the removed sludge and water to said retort system.

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8. (Currently Amended) The vehicle mounted oil recovery system as claimed in claim 3, wherein said retort system is mounted directly upon an exhaust system of the vehicle, said retort system capturing heat from the exhaust system of the vehicle to provide energy to pyrolyze for the vaporization of the transported extracted oil into vaporized individual components.

**Claims 9-10 (Cancelled)**

11. (Currently Amended) A method for recovering used oil using an exhaust system of a vehicle, comprising:

(a) extracting a portion of transporting oil and sludge from an engine lubricating system of the vehicle into a retort system;

(b) extracting and conveying combustion heat from the exhaust system of the vehicle to the retort system; and

(c) vaporizing, in the retort system, using the extracted combustion heat, distilling through vaporization using the conveyed heat of combustion, the transported oil into individual components fuel and water from the extracted oil and sludge to produce sludge and an oil of high molecular weight hydrocarbons; and

(d) pyrolyzing, in the retort system, using the extracted combustion heat, the sludge and oil of high molecular weight hydrocarbons into low molecular weight hydrocarbon vapors.

12. (Currently Amended) The method as claimed in claim 11, further comprising:

(d)(e) providing transporting the vaporized components fuel vapors, water vapors, and low molecular weight hydrocarbon vapors to a fuel system of the vehicle for combustion thereof.

13. (Currently Amended) The method as claimed in claim 11, further comprising:

(d) transporting the vaporized components to a temperature controlled separation chamber; (e) cooling the vaporized fuel, the vaporized water, and the low molecular weight hydrocarbon vapors transported oil vapor components so as to condense vaporized the oil vapor components into usable lubricating oil;

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(f) providing non-condensed transporting post-condensing vaporized components remaining within the temperature controlled separation chamber to a fuel system of the vehicle for combustion thereof; and

(g) providing transporting the condensed vaporized oil vapor components to the engine lubricating system of the vehicle.

14. (Currently Amended) The method as claimed in claim 11, further comprising:

~~(d)(e) providing actively generated to the retort system so as to provide supplemental energy to the retort system for the vaporization of the transported oil into individual components cooling the vaporized fuel, the vaporized water, the low molecular weight vapors, and the high molecular weight vapors so as to condense high molecular weight vapors;~~

(f) providing non-condensed vapors to a fuel system of the vehicle for combustion thereof; and

(g) providing the condensed vapors to the retort system for additional pyrolysis.

15. (Currently Amended) The method as claimed in claim 11; further comprising:

~~(d)(e) cyclonically/centrifugally removing sludge and water from the oil of engine lubricating system of the vehicle; and~~

~~(e)(f) transporting providing the removed sludge and water to the retort system.~~

16. (Currently Amended) The method as claimed in claim 11~~3~~, further comprising:

~~(d)(e) cyclonically/centrifugally removing sludge and water from the oil of engine lubricating system of the vehicle; and~~

~~(e)(f) transporting metering the removed sludge and water to the retort system.~~

#### Claims 17-18 (Cancelled)

19. (New) The vehicle mounted oil recovery system as claimed in claim 1, wherein said retort system includes a heating apparatus to provide supplemental heat so as to maintain a portion of the vaporized components vaporized.

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20. (New) The vehicle mounted oil recovery system as claimed in claim 1, wherein said retort system includes a cooling apparatus to provide cooling so as to condense a portion of the vaporized components.

21. (New) The vehicle mounted oil recovery system as claimed in claim 1, wherein said retort system further includes:

an additional sloping tube;

said additional sloping tube having a first end and a second end such that a slope from said first end to said second end is downward;

said first end of said sloping tube and said first end of said additional sloping tube being connected;

a first controllable supplemental heat source to provide supplemental heat to said sloping tube so as to maintain a portion of the vaporized components vaporized; and

a second controllable supplemental heat source to provide supplemental heat to said additional sloping tube so as to maintain a portion of the vaporized components vaporized.

22. (New) The vehicle mounted oil recovery system as claimed in claim 1, wherein said retort system further includes:

an additional sloping tube;

said additional sloping tube having a first end and a second end such that a slope from said first end to said second end is downward;

said first end of said sloping tube and said first end of said additional sloping tube being connected;

a first controllable supplemental heat source to provide supplemental heat to said sloping tube so as to maintain a portion of the vaporized components vaporized;

a second controllable supplemental heat source to provide supplemental heat to said additional sloping tube so as to maintain a portion of the vaporized components vaporized; and

a cooling apparatus to provide cooling to said sloping tube so as to condense a portion of the vaporized components and provide additional pyrolysis of the condensed components.

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23. (New) The vehicle mounted oil recovery system as claimed in claim 1, wherein said retort system further includes:

an additional sloping tube;

said additional sloping tube having a first end and a second end such that a slope from said first end to said second end is downward;

said first end of said sloping tube and said first end of said additional sloping tube being connected;

a first controllable supplemental heat source to provide supplemental heat to said sloping tube so as to maintain a portion of the vaporized components vaporized;

a second controllable supplemental heat source to provide supplemental heat to said additional sloping tube so as to maintain a portion of the vaporized components vaporized;

a first cooling apparatus to provide cooling to said sloping tube so as to condense a portion of the vaporized components and provide additional pyrolysis of the condensed components; and

a second cooling apparatus to provide cooling to said additional sloping tube so as to condense a portion of the vaporized components for use in the engine lubricating system of the vehicle.

24. (New) The vehicle mounted oil recovery system as claimed in claim 1, further comprising:

a metering device to meter extracted oil from the engine lubricating system of the vehicle to said retort system.